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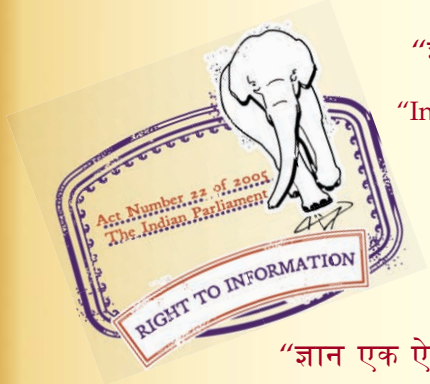
IS 13752 (1993): Guidelines for Reporting Sequence of Elements in Steel and Pig Iron and Mechanical Properties in Steels [MTD 4: Wrought Steel Products]



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"Knowledge is such a treasure which cannot be stolen"

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IS 13752 : 1993
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Indian Standard

GUIDELINES FOR REPORTING SEQUENCE OF ELEMENTS IN STEEL AND PIG IRON AND MECHANICAL PROPERTIES IN STEELS

UDC 669·141·2 : 620·17

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 1993

Price Group 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by General Metallurgical Standards Sectional Committee had been approved by the Metallurgical Engineering Division Council.

A need for standardization of the sequence of presentation of different elements in stipulation the chemistry of steel has been felt. Further, there is a need to have uniform sequence of mechanical properties to be reported by the manufacturing units. This standard has been prepared to cater to the above needs.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GUIDELINES FOR REPORTING SEQUENCE OF ELEMENTS IN STEEL AND PIG IRON AND MECHANICAL PROPERTIES IN STEELS

1 SCOPE

1.1 This standard covers the general guidelines for sequential reporting of chemical elements in steel/pig iron.

1.2 It also provides guidelines for standardizing the sequential reporting of mechanical properties and uniform format for the test certificate issued by the manufacturer.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
228	Methods for chemical analysis of steel (issued in parts)
1500 : 1983	Method for Brinell hardness test for metallic materials (*second revision*)
1586 : 1988	Method for Rockwell hardness test for metallic material (scales A-B-C-D-E-F-G-H-K) (*second revision*)
1599 : 1985	Method for bend test (*second revision*)
1608 : 1972	Method for tensile testing of steel products (*first revision*)
1663 : 1972	Method for tensile testing of steel sheer and strip of thickness 0·5 mm to 3 mm (*first revision*)
1757 : 1988	Method for charpy impact test (V-notch) for metallic material (*second revision*)
3803 (Part 1) : 1989	Steel conversion of elongation values : Part 1 Carbon and low alloy steels (*second revision*)
3803 (Part 2) : 1989	Steel conversion of elongation values : Part 2 Austenitic steels (*second revision*)
5072 : 1988	Methods for Rockwell superficial hardness test (scales 15N, 30N, 45N, 15T, 30T and 45T) (*first revision*)
10842 : 1984	Testing and evaluation procedure for Y groove crackability test

3 CHEMICAL ANALYSIS AND PHYSICAL TESTS

3.1 The material shall be analyzed and tested in accordance with the methods specified in appropriate Indian Standards on analysis and testing. Where no appropriate standard exists and the material specification does not specify the methods, analysis and testing shall be carried out in accordance with the accepted trade and technological practice and shall be mutually agreed to between the supplier and the purchaser.

3.2 The chemical analysis may be made in accordance with apropriate part of IS 228 or any other established instrumental/chemical method. In case of dispute the procedure given in relevant parts of IS 228 shall be the referee method.

3.3 The tensile strength, yield stress and percentage elongation of steel shall be determined from standard test pieces in accordance with IS 1608 : 1972 and IS 1663 : 1972.

3.4 Bend test shall be conducted in accordance with IS 1599 : 1985.

3.5 Normally charpy impact test should be carried out at room temperature, however, if required by the purchaser it shall be carried out at subzero temperature. The details of the test method and test requirements shall be as given in IS 1757 : 1988.

3.6 Carbon Equivalent

Unless otherwise specified in the enquiry and order, or otherwise agreed to, the carbon equivalent for the purpose of guidance in determination of the pre and post weld treatment shall be computed as follows and reported:

$$\text{C.E.} = \text{C} + \frac{\text{Mn}}{6} + \frac{\text{Ni} + \text{Cu}}{15} + \frac{\text{Cr} + \text{Mo} + \text{V}}{5}$$

4 SEQUENCE OF ELEMENTS

4.1 Chemical composition of steel/pig iron (cast, wrought and alloy) may be reported in the sequence given below:

C, Si, Mn, P, S, Cr, Mo, Ni.

4.2 Any other element may be reported in alphabetical order of their chemical symbols, for example, Al, As, Cu, Nb, V, etc.

5 SEQUENCE OF MECHANICAL PROPERTIES

5.1 Sequence of mechanical properties to be reported in test certificate is given below:

(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
Y.S./0·2% P.S. MPa	U.T.S. MPa	Elongation (%) GL= $5{\cdot}65\sqrt{So}$	Reduction in Area (%)	Bend Test	Rebend Test	Impact Charpy/ Izod (Joules)	Hardness	Welda-bility	Others

5.2 Other mechanical properties to be reported in the sequence of alphabetical order.

6 TEST CERTIFICATE

Relevant test certificate for the product shall contain chemical element and mechanical properties in the sequence given in **4** and **5**.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :	Telephone
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	331 01 31 331 13 75
Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola, CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40 53 23 84
Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
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